Dr. Gray informs me that the plant is quite rare. This, however, is not the case at and south of San Diego, where it is rather common, but appears to have been overlooked heretofore. The same is true of *Echidocarya Californica* and *Harpagonella Palmeri.*

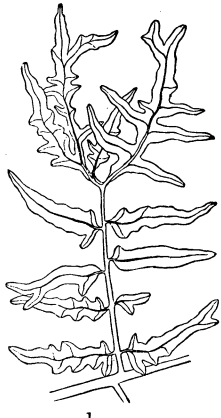
Salt Lake City, Utah. MARCUS E. JONES.

Adventitious leaf on Dandelion.—I have found to-day a dandelion (*Taraxacum Dens-leonis*) with a well-marked though small leaf on the otherwise naked scape. It is three inches below the involucre.

W. W. BAILEY.

Abnormal Growths in Ferns.—The following notes are from observations on specimens collected during the present season on Staten Island:

Pteris aquilina L.—Branches of the frond showing a great tendency to bifurcation. In the specimen figured, one of the branches is three times bifurcated, and many of the pinnae show the same tendency. In another specimen the pinnules are remarkably crenate and finely undulate on the surface, as if passed through a fluting-machine, with many edges fringed.



These two varieties were found in a limited locality, near Tottenville, in company with the var. *caudata*, Hook.,* gradually merging by every intermediate stage into the typical form.

Osmunda cinnamomea, L.— A fertile frond in which the upper half is composed of very much constricted sterile pinnae ; apparently approaching var. *frondosa*, Gray, which is, however, distinguished by being fertile above and sterile below, the very opposite of the specimen in question.—Found near Garretson's ; one specimen only.

Aspidium acrostichoides, Swartz, var. *incisum*, Gray.—A great many forms seem to be included under this variety. In some of the fertile fronds every one of the pinnae is constricted, and covered wlth fruit throughout its entire surface. From this extreme there is every intermediate stage to the typical form. In some, the tips only are fertile, in others, the fruit is scattered over the surface promiscuously, and in rare cases is arranged in regular rows as in *A. marginale*, Swartz. Only two localities have thus far yielded these forms; near Four Corners and Egbertville. ARTHUR HOLLICK.

Botanical Notes.—*Expansive Power of Fungi.*—The marvellous expansive power resulting from the rapid growth of the soft cellular tissue of fungi was strikingly illustrated a short time since in a grain elevator at Buffalo, N. Y.

The asphalt flooring of the building was over a foot thick, in two

* It has been decided by Prof. Eaton that the variety found at Staten Islanp is not the true *caudata*.—ED.

layers. The upper layer was seven inches thick, and was laid hot, rolled down, and thoroughly cooled four years ago. Below this there was an old floor of tar and gravel, six inches thick. A curious bulge in the floor was first noticed, covering about a square foot. In six hours the floor was burst open, and a perfectly formed toadstool, with a stem two inches through and a very wide cap, made its appearance. Elsewhere the floor was smooth and unbroken.

The Sweet Potato.—In a paper which he has kindly sent us, M. DeCandolle calls attention to a character in the sweet potato plant to which sufficient attention has not been paid by systematists, and that is the radical tubercles ("sweet potatoes"), which exist in no other plant of the order Convolvulaceae. "In fact," says the author, "the dilated portions of *Convolvulus Jalapa*, *C. pentaphyllus*, *C. Scammonia*, etc., are caudices or rhizomes, as we may easily satisfy ourselves from figures worthy of confidence published in different works. I shall not stop to question whether in these species the expanded portion is the base of the stem or the principal root or a combination of both, this depending much on the character which we choose for distinguishing root from stem. It is sufficient to point out as a fact that in the sweet potato the expansions belong to lateral roots, while in the other species mentioned, it is the primary axis that becomes a tubercle. This difference is connected with other and greater ones. The roots of the sweet potato (*Convolvulus Batatas*, L.; *Batatas edulis*, Choisy) consist especially of a cellular tissue filled with fecula, and have a saccharine taste. The axillary tubercles, on the contrary, offer a remarkable complication of vessels and cells which secrete resinous matters. The sweet potato is good to eat, but the other roots, like the rhizomes of scammony, are eminently purgative. Generally, in this family, what belongs wholly or in part to the stems is more or less purgative, as the stems of *Convolvulus Sepium* formerly employed. * * * Whether we adopt the genus *Batatas* of Choisy, or whether we reject it, with Meissner, or as Messrs. Bentham and Hooker have done in their Genera, the peculiar and rare character of the roots of the sweet potato should be in some way made prominent, and it appears to be impossible to leave the plant immediately along side of the jalap. * * * The geographical origin of the sweet potato is still a problem. I have tried to solve it in a work now in press, entitled Origin of Cultivated Plants. The probability is in favor of an American origin, but there are very singular reasons for considering the question as doubtful."

The Gymnocladus as a Fly-Poison.—A Virginian correspondent of the *American Agriculturist* asserts that the male trees of the Kentucky coffee-tree (*Gymnocladus Canadensis*) have been long observed by him to be a sure insecticide. He says: "Back of our house here, and overhanging the piazza, is a very large coffee-tree. Though this locality is infested, like Egypt, with a plague of flies, we have never suffered any serious annoyance from them. One year this tree was nearly stripped of its leaves by a cloud of potato-flies (the blistering fly), and we feared that the tree would die from the complete defoliation. In three days, the ground beneath was black with a carpet of corpses, and the tree put out new leaves and still flourishes.

For ten years we have used the bruised leaves, sprinkled with molasses water, as a fly-poison. It attracts swarms of the noisome insects, and is sure death to them."

Although the seeds of *Gymnocladus* are harmless, and have been used as a substitute for coffee, the leaves of the tree are said to contain *cytisine*, a vegetable principle which, in certain doses, acts on the human subject as an acrid poison. It is perhaps to this principle that are to be ascribed the effects of the leaves as an insecticide.

Latent Vitality of Seeds.—Messrs. Ph. Van Tieghem and Gaston Bonnier have been making some preliminary experiments, says *The Gardeners' Chronicle*, to ascertain the effects of different conditions on the latent vitality of seeds. On January 9th, 1880, several packets of seeds supplied by Vilmorin were divided each into three equal parts. One portion was exposed to the free air, but secured from from dust; another portion was put into closed air, securely corked up in a tube; while the third was placed in pure carbonic acid. At the end of two years the seeds were taken out and weighed, and afterwards sown. With regard to weight, all the seeds exposed to free air showed an increase. Thus, for example, fifty seeds of the common pea were found to have increased about $\frac{1}{72}$ of their original weight; and fifty seeds of the French bean about $\frac{1}{56}$ of their original weight. The seeds confined in closed air increased in weight, but infinitely less than those exposed to free air, and the increase in some instances was so trifling as to be hardly measurable. Thus, fifty peas increased about $\frac{1}{700}$ of their original weight, and fifty beans about $\frac{1}{1190}$ of their original weight. As for the seeds placed in carbonic acid, they did not vary half a milligramme from their original weight. The following are two examples of the comparative germination of the seeds, the conditions being as near as possible exactly the same:

Peas left in the free air, 90 per cent. germinated.
" " " closed air, 45 per cent. germinated.
" " " carbonic acid, 0 per cent. germinated.
Beans " " free air, 98 per cent. germinated.
" " " closed air, 2 per cent. germinated.
" " " carbonic acid, 0 per cent. germinated.

The Cross-fertilization of Flowers by Insects.—In his translation of Darwin's work on Cross-fertilization, M. Heckel, in a foot-note, urges, as a decisive argument against the cross-fertilization of flowers by insects, the fact that these latter auxiliary aids are absent from the flowery summits of high mountains, or at least are extremely rare there.

M. Ch. Musset, after four years' residence and observation at Grenoble, in the centre of a region which has all altitudes from 600 to 10,000 feet, comes forward with a note in the *Comptes Rendus* of the Académie des Sciences (T. xcv., No. 6), in which he fully confirms the views of Darwin, and shows that M. Heckel's objection must fall to the ground. He testifies as the result of manifold observations of his own, supported by the testimony of several distinguished botanists and entomologists of the region, that all orders of insects are represented up to an altitude of 9,800 feet; that above that height Lepi-

doptera, Diptera and certain Hymenoptera are more numerous than the other orders; that the number of genera, species and individuals of nectarophilous insects is proportional to that of flowers, and is sometimes incalculable; that the hours of opening and closing of nyctitropic flowers (which are much more numerous than usually believed) are synchronous with the awakening and sleep of insects; that the apparent number of nectarophilous insects is in physiological and physical relation with the number of their favorite flowers, the calorific and hygrometric, calm or troubled state of the atmosphere, and also with the rainy, stormy, dark or bright state of the sky.

M. Musset adds that dew is one of the predominant causes of the temporary absence of insects.

Botanical Literature.

Contributions to American Botany. X. By Sereno Watson. From the *Proceedings* of the American Academy of Arts and Sciences. Vol. xvii., pp. 316–382.

The contents of this tenth *Contribution* by Mr. Watson, which was presented to the American Academy of Arts and Sciences May 5th, and issued August 10th of the present year, are: I. 'List of Plants from Southwestern Texas and Northern Mexico, collected chiefly by Dr. E. Palmer in 1879–'80. (Part 1. Polypetalae).'—This collection was made in 1879, mostly in the region lying northwest of San Antonio, Texas, and along the routes from that place to Laredo and Eagle Pass on the Rio Grande, and in 1880 in the States of Coahuila and Nuevo Leon in Mexico. In addition, determinations are given of a collection made by Dr. J. G. Schaffner in the State of San Luis Potosi, as well as of some plants received from Prof. Alfred Dugès of Guanajuato, Mexico. Forty-six new species are described. II. 'Descriptions of New Species of Plants chiefly from our Western Territories.'—In this paper, descriptions are given of seventy-seven species, all but three of which have hitherto been unknown to science.

U. S. Commission of Fish and Fisheries. (*Part vii.*) *Report of the Commissioner for* 1879. Washington: Government Printing Office, 1882.

In this Report, just distributed, we find Prof. Farlow's elaborate account of the Marine Algae of New England—a paper which the author issued over a year ago in the form of a reprint, and which we noticed at some length at the time. (BULLETIN, Vol. viii., p. 94.)

SERIAL PUBLICATIONS.

Bulletin of the Buffalo Society of Natural Sciences. Vol. iv., No. 3. (August).—'The Plants of Buffalo and its Vicinity' (Part i.), by David F. Day.

The Syracuse Botanical Club.—We learn from Mrs. Rust that at the March meeting of the Syracuse Botanical Club the following officers were elected for the ensuing year: President, Mrs. M. J. MYERS; Vice-President, Mrs. D. F. GOTT; Recording Secretary, Mrs. HARRIET WHITE; Corresponding Secretary, Mrs. KATE S. BARNES; Treasurer, Mrs. ANNIE D. FAIRBANKS.